WHAT IS CLAIMED IS:

1. A method for configuring a network that includes a plurality of nodes connected by links, said method comprising the steps of:

identifying criteria for transporting classes of traffic in the network;

simulating the classes of traffic to determine one or more QoS mechanisms for configuring the nodes such that the identified criteria are satisfied;

determining parameters for configuring the determined QoS mechanisms based on the simulated classes of traffic;

determining multiplexing gains of the classes of traffic in the links based on the simulated classes of traffic; and

configuring one or more resources in the network based on the determined QoS mechanisms, the determined parameters, and the determined multiplexing gains.

2. The method of claim 1 further comprising the steps of:

receiving a request for establishing a flow in the network; and

configuring one or more of the nodes through which the flow is established according to the determined QoS mechanisms, the determined parameters, and the determined multiplexing gains.

3. The method of claim 2, wherein the step of receiving a request comprises the step of:

receiving from one of the nodes desiring to communicate with another one of the nodes, the request including information indicating a requested bandwidth.

4. The method of claim 2, further comprising

determining a path that includes one or more of the links in the network;

determining an available bandwidth for each of the one or more links based on dynamically determined bandwidth information about the one or more links; and

establishing the flow if the available bandwidth is greater than or equal to a requested bandwidth in the request.

5. The method of claim 1, further comprising the steps of:

comparing a previous path in the network with a current path in the network to identify links added to the previous path and links deleted from the previous path;

for each link added to the previous path, subtracting a requested bandwidth from an available bandwidth of the added link;

for each link deleted from the previous path, adding the requested bandwidth to an available bandwidth of the deleted link; and

for each link added to the previous path, determining that the added link is congested if the available bandwidth of the added link is less than zero.

6. The method of claim 1, wherein the step of identifying the criteria comprises the step of:

defining each of the identified classes of traffic by at least one or more of packet loss, one-way time delay, packet jitter, or loss distribution.

7. The method of claim 1, wherein the step of simulating the classes of traffic comprises the step of:

determining a Token Bucket mechanism for configuring one or more of the nodes.

8. The method of claim 1, wherein the step of simulating the classes of traffic comprises the step of:

determining a Random Early Discard mechanism for configuring one or more of the nodes.

9. The method of claim 1, wherein the step of simulating the classes of traffic comprises the step of:

determining a Weighted Fair Queuing mechanism for configuring one or more of the nodes.

10. The method of claim 1, wherein the step of simulating the classes of traffic comprises the step of:

determining a Deficit Round Robin mechanism for configuring one or more of the nodes.

12. The method of claim 1, wherein the step of determining the multiplexing gains comprises the step of:

determining statistical multiplexing gains of the classes of traffic in the links based on the simulated classes of traffic.